Journal of Uncertain Systems

Edited by International Committee of Uncertain Systems, WAU
Published by World Academic Union (World Academic Press)
Academic House, 113 Mill Lane, Wavertree Technology Park, Liverpool, L13 4AH, UK

CONTENTS

1. Contents

2. Editorial Board

3. Message from Editors

ARTICLE

4. A Survey of Entropy of Fuzzy Variables
   Baoding Liu

14. How to Take into Account Dependence between the Inputs:
    From Interval Computations to Constraint-Related Set
    Computations, with Potential Applications to Nuclear Safety,
    Bio- and Geosciences
   M. Ceberio, S. Ferson, V. Kreinovich, S. Chopra, G. Xiang, A.
   Murguia and J. Santillan

38. Granular Computing - The Emerging Paradigm
    W. Pedrycz

62. On a Continuous Lattice Approach to Modeling of Coarse Data
    in System Analysis
    H. T. Nguyen and H. Tran

74. Credibilistic Game with Fuzzy Information
    Jinwu Gao

Bibliographic

ISSN: 1752-8909 (print), 1752-8917 (online), Quarterly
Edited by International Committee of Uncertain Systems, WAU
Published by World Academic Union (World Academic Press)
Publisher Contact: Academic House, 113 Mill Lane
Wavertree Technology Park
Liverpool L13 4AH, England, UK
Email: publishing@wau.org.uk
publishermail@gmail.com
U R L: www.World Academic Union.com

Copyright © World Academic Union (World Academic Press)
JOURNAL OF UNCERTAIN SYSTEMS

EDITOR-IN-CHIEF
Yan-Kui Liu
College of Mathematics & Computer Science
Hebei University, Baoding 071002, China
Email: yliu@hbu.edu.cn

ADVISORY EDITORS
Shu-Cherng Fang
North Carolina State University, USA
Email: fang@eos.ncsu.edu

Baoding Liu
Tsinghua University, China
Email: liu@tsinghua.edu.cn

Hung T. Nguyen
New Mexico State University, USA
Email: hunguyen@nmsu.edu

Giulianella Coletti
Università di Perugia, Italy
Email: coletti@dipmat.unipg.it

Shyi-Ming Chen
National Taiwan University of Science and Technology
Email: smchen@mail.ntust.edu.tw

Kwang Hyung Lee
KAIST, Korea
Email: khlee@kaist.ac.kr

Hung T. Nguyen
University of Ostrava, Czech Republic
Email: vilen novak@osu.cz

Augustine O. Esogbue
Georgia Institution Technology, USA
Email: aesogbue@isye.gatech.edu

E. Stanley Lee
Kansas State University, USA
Email: eslee@kisu.edu

Vilem Novak
University of Ostrava, Czech Republic
Email: vilen novak@osu.cz

Liya Ding
Macao University of Science and Technology, Macao
Email: lyding@must.edu.mo

Zhi-Qiang Liu
City University of Hong Kong
Email: zq.liu@cityu.edu.hk

Jin Peng
Huanggang Normal University, China
Email: pengin01@tsinghua.org.cn

Augustine O. Esogbue
Georgia Institution Technology, USA
Email: aesogbue@isye.gatech.edu

M.K. Luhandjula
University of South Africa
Email: luhanmk@unisa.ac.za

Masao Mukaidono
Meiji University, Japan
Email: masao@cs.meiji.ac.jp

Boualem Ben Boughrara
University of Franche-Comté
Email: benboughra@yahoo.com

Vincenzo Loia
University of Salerno via S. Allende, Italy
Email: loia@unisa.it

Irina Perfilieva
University of Ostrava, Czech Republic
Email: irina.perfilieva@osu.cz

Jinwu Gao
Renmin University of China
Email: jgao@ruc.edu.cn

Bernadette Bouchon-Meunier
University of Paris 6, France
Email: bernadette.bouchon-meunier@lupt6.fr

Romano Scozzafava
University “La Sapienza”, Italy
Email: romscozz@dmmn.uniroma1.it

Mitsuo Gen
Waseda University, Japan
Email: gen@waseda.jp

Enrique Miranda
Rey Juan Carlos University, Spain
Email: enrique.miranda@urjc.es

Ruixing Zhao
Tianjin University, China
Email: zhao@tju.edu.cn

Janusz Kacprzyk
Polish Academy of Sciences, Poland
Email: kacprzyk@ibspan.waw.pl

Sadaaki Miyamoto
University of Tsukuba, Japan
Email: miyamoto@esys.tsukuba.ac.jp

Yuanguo Zhu
Nanjing University of Science and Technology, China
Email: yzhu@njust.edu.cn

Vladik Kreinovich
University of Texas at El Paso, USA
Email: vladik@utep.edu

Uncertainty Theory Laboratory
Department of Mathematical Sciences
Tsinghua University, Beijing 100084, CHINA
Email: jus@math.tsinghua.edu.cn

Claude Langrand
University of Sciences and Technology of Lille, France
Email: claude.langrand@univ-lille1.fr

China editorial office:

Vilem Novak
University of Ostrava, Czech Republic
Email: vilen novak@osu.cz

Contribution enquiries and submitting
Author may contact editors by email at addresses above directly. The author(s) may send Latex, Word, PDF or Postscript file of the manuscript to the editorial office at jus@math.tsinghua.edu.cn.

For more detail to submit papers please visit www.JUS.org.uk

Subscription
For printed-journal (GBP 272 for one year): please contact publisher by mail or email at the address on the first page.
For free e-journal: please visit www.JUS.org.uk
A Message from the Editors

It is our pleasure to launch this new international journal “Journal of Uncertain Systems” (JUS) with World Academic Press, UK. Our initiative was motivated by a strong support from the research community on uncertainty analysis, especially in artificial intelligence, with regard to a specific journal devoted to research and applications on systems (physical and social) in which various types of uncertainty coexist.

In today applications of technologies, uncertainty in various forms is present in gathered information. This is typical in the desire to build machines which can exhibit human remarkable capability of intelligence, mainly in decision-making, in both physical and social sciences, where we are driven to examine how humans use perception-based information to arrive at decisions. For example, it is in the scientific spirit of “goals”, “data available” and “tools needed” (in this order) that the concept of random fuzzy sets appear as indispensible data in information processing for building intelligent systems. These include intelligent control, pattern discovery, data mining, decision-making in social problems.

In complex situations where uncertainty in data, such as imprecise probabilities, incomplete information, missing information, fuzziness in natural language description of meaning, and uncertain occurrences of events, there is a need to enlarge the domain of applicability of the traditional theory of statistics. Recent decades have witnessed this trend of enlarging its solid inference procedures to new types of data, such as coarse data, i.e., data with low quality, exemplified by standard situations in medical statistics and biostatistics where data are censored, grouped or imprecise. Also, in the field of Bioinformatics, data cannot be observed directly, where models like Hidden Markov processes could be used.

The main objective of launching a new journal on uncertain systems is twofold. Firstly, such a journal will promote the research and development of uncertainty theory in its most general framework. Secondly, it will advance the applications of uncertainty theory to a new stage, especially in uncertain programming, such as stochastic programming, and random and fuzzy programming. The new journal will also provide a forum for research awareness of advanced theoretical results to enlarge the research repertoire of tools and techniques for real-world applications.

We hope the Journal of Uncertain Systems will become a major international forum for researchers to exchange their research results and applications of uncertain systems.